

CLAIM AMENDMENTS

Please replace the pending claims with the following claim listing:

1. (currently amended) A computer operated ~~encoding~~ system for producing an electronic security device image from one or more electronic source images, said security device image being adaptable for printing onto a document to secure said document against data alteration, said system for producing comprising:

(a) deflection encoding means comprising means for applying a selected software lens to a first said source image and producing a deflected image;

(b) encryption ~~encoding~~ means comprising means for applying ~~an~~ a mathematical encryption function to said deflected image or a second said source image and producing an encrypted image; and,

(c) means for overlaying said deflected and encrypted images to produce said security device image whereby neither of said first and second source images is visible upon viewing said security device image and wherein each of said deflected and encrypted images is preserved and identifiable by means of a predetermined feature distinct thereto such that either of said deflected and encrypted images may be decoded without interfering with an ability to separately decode the other of said deflected and encrypted images;

wherein said deflected image is configured for detecting therefrom said first source image by decoding by means of:

(i) a physical lenticular lens corresponding to said software lens being manually applied to a printing of said security image; and/or,

(ii) computer decoding processing applying said software lens to said deflected image, each said decoding means being selectable according to a user's choice without interference from any prior use of either or both said decoding means to detect said first source image; and, said encrypted image is configured for detecting therefrom either said deflected image or said second source image ~~solely~~ by means of computer decoding processing

applying to said encrypted image a decryption function corresponding to said encryption function ~~to said encrypted image~~.

2. (currently amended) A ~~An encoding~~ system according to claim 1 wherein said security device image includes a plurality of said deflected images, each said deflected image produced from one of said source images, said deflected images being interlaced to form an interlaced deflected image and said interlaced deflected image being overlaid with said encrypted image.

3. (currently amended) A ~~An encoding~~ system according to claim 1 wherein said software lens is selected from the group comprising line lenses, curved lenses and bitmap lenses.

4. (currently amended) A computer operated ~~decoding~~ system for detecting the presence of one or more latent source images within a security device image produced by ~~an encoding a~~ system according to claim 1 whereby said security device image comprises said overlaid deflected and encrypted images, said ~~decoding~~ system for detecting comprising:

(a) image separation means configured for separating said overlaid encrypted and deflected images according to said predetermined feature to provide a first deflected image according to said overlaid deflected image and said encrypted image;

(b) decryption ~~decoding~~ means comprising computer processing means for applying to said encrypted image said decryption function corresponding to said encryption function used to produce said encrypted image and producing therefrom a decrypted image, said decrypted image being either a second deflected image according to said overlaid deflected image or said second source image;

(c) deflection decoding means comprising computer processing means for applying to said first deflected image, or to said decrypted image if said decrypted image is said second deflected image, a software lens corresponding to said software lens used to produce said overlaid deflected image, for aligning said software lens with said first deflected image, or said decrypted image, and for producing a decoded image from said applying: and,

(d) output means for providing an output for use in characterizing said document as having been subject to data alteration or not,

wherein said characterization is based on a comparison of said decoded image to said first source image.

5. (cancelled)

6. (currently amended) A ~~decoding~~ system for detecting according to claim 4 wherein said aligning means comprises evaluation means for evaluating whether said decoded image corresponds to said first source image, wherein said evaluation means operates iteratively with said applying means to apply on each iteration either a different position of said software lens or other different lens parameter, until either said decoded image is determined to correspond to said first source image or all available lens positions and/or parameters have been applied.

7. (currently amended) A ~~decoding~~ system for detecting according to claim 6 wherein said evaluation means uses a scoring algorithm to calculate a score based on pixel statistics calculated for each iteratively produced deflection decoded image.

8. (currently amended) A ~~decoding~~ system for detecting according to claim 7 wherein said decoded image is determined to correspond to said first source image when a relatively large change occurs in said score from one said iteration to the next.

9. (currently amended) A ~~decoding~~ system for detecting according to claim 8 wherein said output comprises said decoded image when it has been determined to correspond to said first source image or an error message if no such determination is made.

10. (currently amended) A ~~An image encoding~~ method for producing an electronic security device image from one or more electronic source images, said security device image being adaptable for printing onto a document to secure said document against data alteration, said method for producing comprising the steps:

(a) applying a selected software lens to a first said source image and thereby producing a deflected image;

(b) applying an a mathematical encryption function to said deflected image or a second said source image and thereby producing an encrypted image;

(c) overlaying said deflected and encrypted images and producing therefrom said security device image whereby neither of said first and second source images is visible upon viewing said security device image and wherein each of said deflected and encrypted images is preserved and identifiable by means of a predetermined feature distinct thereto such that either of said deflected and encrypted images may be decoded without interfering with an ability to separately decode the other of said deflected and encrypted images,

whereby said deflected image is configured for detecting therefrom said first source image by decoding by means of:

(i) a physical lenticular lens corresponding to said software lens being manually applied to a printing of said security image; and/or,

(ii) computer decoding processing applying said software lens to said deflected image, each said decoding means being selectable according to a user's choice without interference from any prior use of either or both said decoding means to detect said first source image; and, said encrypted image is configured for detecting therefrom either said deflected image or said second source image ~~solely~~ by means of computer decoding processing applying to said encrypted image a decryption function corresponding to said encryption function ~~to said encrypted image~~.

11. (currently amended) A ~~An encoding~~ method according to claim 10 whereby a plurality of said deflected images are produced, each said deflected image produced from one of said source images, and interlaced to form an interlaced deflected image and said interlaced deflected image is overlaid with said encrypted image.

12. (currently amended) A ~~An encoding~~ method according to claim 11 whereby said software lens is selected from the group comprising line lenses, curved lenses and bitmap lenses.

13. (currently amended) ~~A An image decoding~~ method for detecting the presence of one or more latent source images within a security device image produced by ~~an encoding~~ a method according to claim 10 whereby said security device image comprises said overlaid deflected and encrypted images, said ~~decoding~~ method for detecting comprising the steps:

(a) separating said overlaid encrypted and deflected images according to said predetermined feature to provide a first deflected image according to said overlaid deflected image and said encrypted image;

(b) applying to said encrypted image said decryption function corresponding to the encryption function used to produce said encrypted image and producing therefrom a decrypted image, said decrypted image being either a second deflected image according to said overlaid deflected image or said second source image;

(c) applying to said first deflected image, or to said decrypted image if said decrypted image is said second deflected image, a software lens corresponding to said software lens used to produce said overlaid deflected image, and aligning said software lens with said first deflected image or said decrypted image, to produce decoded image; and,

(d) characterizing said document as having been subject to data alternation or not, wherein said characterization is based on a comparison of said decoded image to said first source image.

14. (cancelled)

15. (currently amended) A method for detecting according to claim 13 and further including iteratively evaluating whether said decoded image corresponds to said first source image by applying on each iteration either a different position of said software lens or other different lens parameter, until either said decoded image is determined to correspond to said first source image or all available lens positions and/or parameters have been applied.

16. (currently amended) A method for detecting according to claim 15 wherein a scoring algorithm is applied to calculate a score based on pixel statistics calculated for each iteratively produced decoded image.

17. (Original) A method according to claim 16 whereby said decoded image is determined to correspond to said first source image when a relatively large change occurs in said score from one said iteration to the next.

18. (currently amended) A method for detecting according to claim 17 and further comprising the step of displaying said decoded image when it has been determined to correspond to said first source image or providing an error message if no such determination is made.

19. (new) A system according to claim 1 wherein said encryption function comprises a personal identifying feature of said document for personalization of said security device image to said document.

20. (new) A system according to claim 19 wherein said personal identifying feature comprises an identification number of said document.

21. (new) A system according to claim 1 wherein said predetermined feature is colour, wherein one colour is distinct to said deflected image and a different colour is distinct to said encrypted image.

22. (new) A method according to claim 10 whereby a parameter defining said software lens is determined by pre-selected identifying data associated with said document for personalization of said security device image to said document.

23. (new) A computer operated system for producing an electronic security device image from one or more electronic source images, said security device image being adaptable for printing onto a document to secure said document against data alteration, said system comprising:

(a) deflection encoding means comprising means for applying a selected software lens to a first said source image and producing a deflected image;

(b) encryption encoding means comprising means for applying a mathematical encryption function to said deflected image or a second said source image and producing an encrypted image; and,

(c) means for overlaying said deflected and encrypted images to produce said security device image whereby neither of said first and second source images is visible upon viewing said security device image and wherein each of said deflected and encrypted images is preserved and identifiable by means of a predetermined feature distinct thereto such that either of said deflected and encrypted images may be decoded without interfering with an ability to separately decode the other of said deflected and encrypted images;

wherein said deflected image is configured for detecting therefrom, by computer decoding processing applying said software lens to said deflected image, said first source image; and,

wherein said encrypted image is configured for detecting therefrom, by computer decoding processing applying to said encrypted image a decryption function corresponding to said encryption function, either said deflected image or said second source image .

24. (new) A system according to claim 23 wherein said encryption function comprises a personal identifying feature of said document for personalization of said security device image to said document.

25. (new) A system according to claim 24 wherein said personal identifying feature comprises an identification number of said document.